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1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20010027944 A1	20011011	8	Filter device and process	210/243	210/323.1		Bolduan, Peter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6210078 B1	20010403		Methods for the in situ removal of a contaminant	405/263	134/281 205/687		Redwine, James C. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6169046 B1	20010102		Method of manufacturing whisker-reinforced ceramics	501/95.3	264/641 264/669		Sjogren, Clas et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6030632 A	20000229		Non-leaching antimicrobial films	424/405	424/409 424/421		Sawan, Samuel P. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5869073 A	19990209		Antimicrobial liquid compositions and methods for	424/406	424/404 424/407		Sawan, Samuel P. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5705634 A	19980106		High yield preparation of dimeric to decameric chitin	536/124	127/34 536/123.1		Bredenhorst, Reinhard et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5647988 A	19970715		Method of back-washing submerged-type ceramic	210/636	210/321.69 210/739		Kawanishi, Toshio et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 4846906 A	19890711		Methods for the manufacture of porous ceramic shapes	156/89.28	156/245 210/510.1		Heiferich, Richard L. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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1	US 6210078 B1	21							USPAT	USPAT
2	US 6169048 B1	6							USPAT	USPAT
3	US 6030632 A	23							USPAT	USPAT
4	US 5869073 A	22							USPAT	USPAT
5	US 5705634 A	17							USPAT	USPAT
6	US 5647988 A	11							USPAT	USPAT
7	US 4846906 A	6							USPAT	USPAT

# **Brief Summary Text - B87X (15):**

Further, in the method for back-washing a submerged-type ceramic membrane separation apparatus according to the present invention, it is preferable to rinse the ceramic membrane filters with the filtrate or with a solution of a reducing agent after the chemical washing.

# **Brief Summary Text - B87X (16):**

With this feature of the back-washing method, the chemical agent remaining in the ceramic membrane filters and in the filtrate passages can be forced out of the ceramic membrane filters by rinsing the membrane filters with the filtrate after the chemical washing. Where an oxidizing agent is used as the chemical agent, the oxidizing agent can be inactivated by rinsing with the reducing agent after the chemical washing. This prevents such a chemical agent as oxidizing agent in high concentration from coming out of the apparatus along with the filtrate when a filtering operation is resumed.

# **Detailed Description Text - D87X (2):**

With reference to the accompanying drawings, the present invention will be hereinafter described by way of examples. The water treatment systems illustrated in FIGS. 1 and 3 to 5 are used, for example, for water purification of river water, lake water, ground water and the like, activated sludge treatment process for treating sewage water, night soil, industrial waste water and the like, concentration of sludge, separation of bacteria, and desalination of sea water. The submerged-type ceramic membrane separation apparatus separates turbidity, activated sludge, and flock coagulated with such coagulants as poly-(aluminum chloride) (PAC), aluminum sulfate, ferric chloride or poly-(ferric sulfate).

# **Detailed Description Text - D87X (5):**

The membrane separation apparatus 3 comprises a plurality of stacked membrane modules each having a plurality of tubular ceramic membrane filters which are connected to a filtrate suction pipe line 6 for communicating with the inside of the ceramic membrane filters, i.e., filtrate passages. A control valve 7 and a suction pump 8 are disposed intermediate the filtrate suction pipe line 6 which is led to a filtrate tank 9 provided outside the water treatment vessel 1.

# **Detailed Description Text - D87X (39):**

Though, in the foregoing EXAMPLES, each chemical solution is prepared in the back-washing water feeding pipe line by supplying the required chemical agent to the filtrate, the chemical solution may, of course, be preliminarily prepared in the chemical agent vessel and fed into the membrane separation apparatus for the chemical washing. Further, the back-washing method of the present invention is applicable to membrane separation apparatus of the flat-membrane type and an internal-pressure type having tubular ceramic membrane filters is used in the foregoing EXAMPLES of the present invention.

# **Claims Text - C87X (2):**

forcibly supplying filtrate from the apparatus and a chemical agent, separately, to filtrate passages in ceramic membrane filters to wash the ceramic membrane filters with the filtrate during a water washing and to wash the ceramic membrane filters with the chemical agent during a chemical washing.

## **United States Patent (19)** **Kawanishi et al.**

**Patent Number: 5,647,988**  
**Date of Patent: Jul. 15, 1997**

### **150 METHOD OF BACK-WASHING SUBMERGED-TYPE CERAMIC MEMBRANE SEPARATION APPARATUS**

**Inventors:** Toshiro Kawanishi; Shigeki Yokoyama;

Kazuo Ishihara; Yoshitaka  
 Nakamura; Masahiko Shioyama;

Makiharu Takashima; Doshya Ozaki,  
 all of Osaka, Japan

**[73] Assignee:** Kubota Corporation, Japan

**[21] Appl. No.:** 946,014

**[22] Filed:** Dec. 2, 1994

**[30] Foreign Application Priority Data**

May 30, 1994 [JP] Japan

Int. Cl.<sup>4</sup> B01D 62/02

U.S. Cl. 210/731; 210/739;

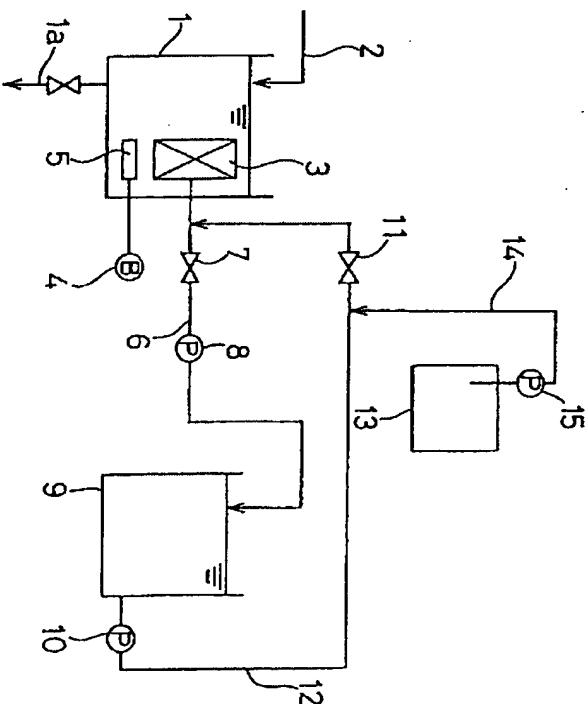
Field of Search 210/741; 210/731.69

References Cited

4,966,020 B01D 62/02

4,980,066 B01D 62/02

7 Claims, 5 Drawing Sheets



**[57] ABSTRACT**  
 A method for back-washing a submerged-type ceramic membrane separation apparatus is provided in which filtrate once removed from the apparatus and a chemical agent are forcibly supplied to filtrate passages in ceramic membrane filters to wash the ceramic membrane filters with the filtrate and with the chemical agent. Wherein the water washing and chemical washing are carried out at a predetermined frequency ratio and for a predetermined time period, or wherein the frequency and time period of the chemical washing are determined on the basis of a transmembrane pressure difference, suction pressure or filtrate flux observed during a filtering operation performed by the membrane separation apparatus. This method makes it possible to avoid an excessive chemical washing, and to reduce the amounts of water and chemical agent and the time required for the chemical washing.

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3	US 6309611 B1	65							USPAT
4	US 6221359 B1	8							USPAT
5	US 6179972 B1	8							USPAT
6	US 6156211 A	16							USPAT
7	US 6117337 A	16							USPAT
8	US 6077431 A	12							USPAT
9	US 5958242 A	5							USPAT

US-PAT-NO: 5958242

DOCUMENT-IDENTIFIER: US 5958242 A

TITLE: In situ filter cleaning

----- KWIC -----

## Brief Summary Text - BREF (2):

A method for cleaning an electrically-conducting filter is described in GB 2 160 545 B which enables fouling to be removed from the filter in situ. In this method an electrochemical cell is established comprising the filter as a first electrode, a counter electrode, and the process liquid as electrolyte. At intervals during the filtration process a potential difference is applied briefly between the two electrodes, so as to generate at the filter a gaseous product which may be in the form of microbubbles, and which cleans the filter. For example a current of 500-3000 A m.sup.-2 of membrane might be applied for 1-5 seconds periodically between 4-15 times an hour. The potential difference is typically applied such that the filter itself is cathodic, to minimise its corrosion, and the filter may be a metallic microporous membrane, or a conducting ceramic membrane. A similar process is described in EP 0 380 266 A, in which the filter may be a porous layer for example of sintered zirconia incorporating a metal mesh, or may be a porous layer superimposed on such a metal mesh. The counter electrode may be of platinised titanium, or as described in EP 0 474 365 A it may be of low chromium stainless steel. It will be appreciated that during the applications of the cleaning potential difference there is considerable electrical power consumption.

Current US Cross Reference Classification - CCXR (3):

210/748

## United States Patent (19)

Patent Number: 5,958,242  
Date of Patent: Sep. 28, 1999

Renell

## [54] IN SITU FILTER CLEANING

[75] Inventor: Paul Anthony Harry Renell, Dicker, United Kingdom

[73] Assignee: AEA Technology PLC, Dicker, United Kingdom

[21] Appl. No.: 08/63,092

[22] Filed: Dec. 19, 1996

[30] Foreign Application Priority Data

Dec. 14, 1995 [30] United Kingdom ..... 95 25583

[31] Int. Cl.<sup>6</sup> ..... B01D 18/04; B01D 61/00

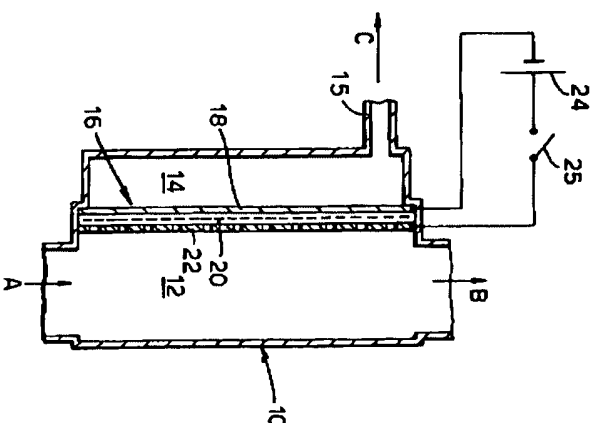
[52] U.S. Cl. .... 210/636; 210/650; 204/554

[58] Field of Search ..... 204/554, 660, 500/25, 500/42, 748; 55/131, 498

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14 Claims, 1 Drawing Sheet



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216545 12/1983 United Kingdom .....  
220086 12/1995 United Kingdom .....  
WO 89/0445 1/1989 WIPO .....  
WO 92/1433 12/1992 WIPO .....

Primary Examiner: Ann Fortuna  
Attorney, Agent, or Firm: William H. Holt

## ABSTRACT

[57] A filter which can be cleaned in situ consists of a filter membrane (33) and fluid permeable electrodes (34, 35). The membrane may be one of the electrodes, or may be electrically non-conducting but integral with or in contact with one of the electrodes (34). The electrodes (34, 35) are separated from each other only by a fluid permeable electrically insulating sheet. This sheet may be less than 1 mm thick, and may be the filter membrane (33). The filter is cleaned by periodic brief applications of electric current between the electrodes (34, 35) so that gas is generated electrolytically, and the close spacing of the electrodes (34, 35) reduces the electric power required.

## DRAFTS

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- L1: (0) 2000de-0016006.ap.
- L2: (0) 2000de-1016006.ap.
- L3: (1031) ceramic adj (membrane or membranes)
- L4: (684913) filter of filters
- L5: (53) 13 near2 14
- L6: (596548) ground or grounds or grounded or grounding
- L7: (1) 15 same 16
- L8: (8) 15 and 16
- L9: (1570) ((210/243) or (210/748)).CCLS.
- L10: (13) 13 and 19
- L11: (157) ((204/572) or (204/665)).CCLS.
- L12: (0) 13 and 111
- L13: (1048) ((204/554-573) or (204/660-674)).CCLS.
- L14: (3) 13 and 113

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1	<input type="checkbox"/>	<input type="checkbox"/>	US 6299778 B1	20011009	12	Catalytically active permeable composite	210/650	204/554;		Pentch, Bernd et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6214204 B1	20010410		Ion-removal from water using activated carbon electrodes	205/758	204/267;		Gadkaree, Kishor P. et al.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	US 5958242 A	19990928	5	In situ filter cleaning	210/636	204/554;		Fennell, Paul Antony Harry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								210/650;			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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- LI: (0) 2000de-0016006.ap.
- LI2: (0) 2000de-1016006.ap.
- LI3: (1031) ceramic adj (membrane or membranes)
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- LI8: (8) 15 and 16
- LI9: (1570) ((210/243) or (210/748)).CCLS.
- LI10: (13) 13 and 19
- LI11: (157) ((204/572) or (204/665)).CCLS.
- LI12: (0) 13 and 111
- LI13: (1048) ((204/554-573) or (204/660-674)).CCLS.
- LI14: (3) 13 and 113
- LI15: (3960) ceramic near2 (filter or filters)
- LI16: (4) 115 and 113

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US-PAT-NO: 5597479

DOCUMENT-IDENTIFIER: US 5597479 A

TITLE: Electro-coalescence/magnetic separation (ECMS) system and components for removal of contaminants from water streams, including desalinization

----- KWIC -----

Detailed Description Text - DEX (5):

The water streams leaving the tubulocore 14, having been subjected to electric and magnetic fields as discussed in Ser. No. 08/200,749, then enter a primary/secondary filter unit 18. As discussed in detail below, filter unit 18 comprises a tank containing a large bed of finely-divided glass and/or ceramic polarizable filter media. This material serves to physically filter and/or magnetically separate coagulated materials, particularly when polarized by application of an electric current thereto. The water is drained from the base of the primary/secondary filter unit 18 by an underdrain so that the media remains in the tank while the water stream is removed therefrom. The underdrain includes elements having an electric potential applied thereto to polarize the media.

Current US Cross Reference Classification - CCR (3):

204/663

Current US Cross Reference Classification - CCR (4):

204/664

Current US Cross Reference Classification - CCR (5):

204/665

# United States Patent (19)

Johnson

(11) Patent Number: 5,597,479  
 (45) Date of Patent: Jan. 28, 1997

(34) ELECTRO-COALESCENCE/MAGNETIC SEPARATION (ECMS) SYSTEM AND COMPONENTS FOR REMOVAL OF CONTAMINANTS FROM WATER STREAMS, INCLUDING DESALINIZATION

(75) Inventor: Dennis E. J. Johnson, Aurora, Ill.

(73) Assignee: Aqua-Ton Systems, Inc., Littleton, Colo.

(21) Appl. No.: 377,620

(22) Filed: Jan. 25, 1995

(51) Int. Cl.<sup>6</sup> 210G19; 210G19; 210G22; 210G23; 210G24; 210G25; 210G26; 210G27; 210G28; 210G29; 210G30; 210G31; 210G32; 210G33; 210G34; 210G35; 210G36; 210G37; 210G38; 210G39; 210G40; 210G41; 210G42; 210G43; 210G44; 210G45; 210G46; 210G47; 210G48; 210G49; 210G50; 210G51; 210G52; 210G53; 210G54; 210G55; 210G56; 210G57; 210G58; 210G59; 210G60; 210G61; 210G62; 210G63; 210G64; 210G65; 210G66; 210G67; 210G68; 210G69; 210G70; 210G71; 210G72; 210G73; 210G74; 210G75; 210G76; 210G77; 210G78; 210G79; 210G80; 210G81; 210G82; 210G83; 210G84; 210G85; 210G86; 210G87; 210G88; 210G89; 210G90; 210G91; 210G92; 210G93; 210G94; 210G95; 210G96; 210G97; 210G98; 210G99; 210G100; 210G101; 210G102; 210G103; 210G104; 210G105; 210G106; 210G107; 210G108; 210G109; 210G110; 210G111; 210G112; 210G113; 210G114; 210G115; 210G116; 210G117; 210G118; 210G119; 210G120; 210G121; 210G122; 210G123; 210G124; 210G125; 210G126; 210G127; 210G128; 210G129; 210G130; 210G131; 210G132; 210G133; 210G134; 210G135; 210G136; 210G137; 210G138; 210G139; 210G140; 210G141; 210G142; 210G143; 210G144; 210G145; 210G146; 210G147; 210G148; 210G149; 210G150; 210G151; 210G152; 210G153; 210G154; 210G155; 210G156; 210G157; 210G158; 210G159; 210G160; 210G161; 210G162; 210G163; 210G164; 210G165; 210G166; 210G167; 210G168; 210G169; 210G170; 210G171; 210G172; 210G173; 210G174; 210G175; 210G176; 210G177; 210G178; 210G179; 210G180; 210G181; 210G182; 210G183; 210G184; 210G185; 210G186; 210G187; 210G188; 210G189; 210G190; 210G191; 210G192; 210G193; 210G194; 210G195; 210G196; 210G197; 210G198; 210G199; 210G200; 210G201; 210G202; 210G203; 210G204; 210G205; 210G206; 210G207; 210G208; 210G209; 210G210; 210G211; 210G212; 210G213; 210G214; 210G215; 210G216; 210G217; 210G218; 210G219; 210G220; 210G221; 210G222; 210G223; 210G224; 210G225; 210G226; 210G227; 210G228; 210G229; 210G230; 210G231; 210G232; 210G233; 210G234; 210G235; 210G236; 210G237; 210G238; 210G239; 210G240; 210G241; 210G242; 210G243; 210G244; 210G245; 210G246; 210G247; 210G248; 210G249; 210G250; 210G251; 210G252; 210G253; 210G254; 210G255; 210G256; 210G257; 210G258; 210G259; 210G260; 210G261; 210G262; 210G263; 210G264; 210G265; 210G266; 210G267; 210G268; 210G269; 210G270; 210G271; 210G272; 210G273; 210G274; 210G275; 210G276; 210G277; 210G278; 210G279; 210G280; 210G281; 210G282; 210G283; 210G284; 210G285; 210G286; 210G287; 210G288; 210G289; 210G290; 210G291; 210G292; 210G293; 210G294; 210G295; 210G296; 210G297; 210G298; 210G299; 210G300; 210G301; 210G302; 210G303; 210G304; 210G305; 210G306; 210G307; 210G308; 210G309; 210G310; 210G311; 210G312; 210G313; 210G314; 210G315; 210G316; 210G317; 210G318; 210G319; 210G320; 210G321; 210G322; 210G323; 210G324; 210G325; 210G326; 210G327; 210G328; 210G329; 210G330; 210G331; 210G332; 210G333; 210G334; 210G335; 210G336; 210G337; 210G338; 210G339; 210G340; 210G341; 210G342; 210G343; 210G344; 210G345; 210G346; 210G347; 210G348; 210G349; 210G350; 210G351; 210G352; 210G353; 210G354; 210G355; 210G356; 210G357; 210G358; 210G359; 210G360; 210G361; 210G362; 210G363; 210G364; 210G365; 210G366; 210G367; 210G368; 210G369; 210G370; 210G371; 210G372; 210G373; 210G374; 210G375; 210G376; 210G377; 210G378; 210G379; 210G380; 210G38



File View Edit Tools Window Help

The screenshot displays a Windows XP interface. The main window is a file explorer showing the contents of 'C:\Program Files\Internet Explorer'. It lists several folders and files, including 'Active', 'L1', 'L2', 'L3', 'L4', 'L5', 'L6', 'L7', 'L8', 'L9', 'L10', 'L11', 'L12', 'L13', 'L14', 'L15', 'L16', 'L17', and 'L18'. Each item has a small icon next to it. Below the list, there's a search box labeled 'Default operator:' with 'OR' entered. To the right of the search box are buttons for 'Speed Dial', 'Links', 'Browsers', 'Queue', and 'Close'. At the bottom of the window, there's a status bar with icons for 'BGS Item', 'SAR Item', 'Image', 'Text', and 'HTML'. On the far right, there's a checkbox labeled 'Highlight all items which...'.

## Drafts

## Pending

## Active

- 11: (28975) (210/348-510.1).CCLS.
- 12: (1036) ceramic adj (membrane or membranes)
- 13: (117) 11 and 12
- 14: (597129) ground or grounds or grounded or grounding
- 15: (234587) earth or earths or earthed or earthing
- 16: (21) 13 and 14
- 17: (16) 13 and 15
- 18: (29) 16 or 17
- Failed
  - (0) 13 same 14
- Saved
- Favorites
- Tagged (0)
- UDC
- Queue
- Trash

Search

List

Browse

Queue

Clear

DB:

USPAT:US:PGUB

Default operator

OR

16 or 17

F5: Highlight all in term index

U I PT P Document ID Issue Date Pages

Title

Current OR

Current XRef

Retrieval C

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Ready

Start

Index: Micro

Exploring: C.V.

WordPerfect: L

WP Print Proc.

Netscape

New case file

Document20

Document22

Customs: pub

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US 5611931 A	7						USPAT

US-PAT-NO: 5611931

DOCUMENT-IDENTIFIER: US 5611931 A

TITLE: High temperature fluid separations using ceramic membrane device

KWIC -----

Abstract Text - ABST (1):

A high temperature ceramic membrane device for separation of fluids at high temperature, the device comprises: (a) a housing having: (i) an entrance for introducing fluids to the housing to be separated; (ii) an exit for removing fluids after being subjected to separation; (b) a plate mounted in one end of the housing, the plate having openings therein; (c) ceramic membrane comprised of porous ceramic tubes having a closed end and an open end, the tubes permeable by a fraction of the fluid to be removed from the fluid as filtrate and impermeable to a second fraction, the open end designed to remove the filtrate from the tubes, the tubes mounted in the openings in the plate so that the closed end is projected into the housing and the open end is extended outside the housing for removing the filtrate; (d) a seal for sealing the plate located adjacent the plate and surrounding the tubes projecting therethrough, the insulation adapted to insulate the hot fluid in the housing from the plate; and (e) cooling outside the housing adjacent the seal to maintain the seal at a relatively low temperature.

TITLE - TI (1):

High temperature fluid separations using ceramic membrane device

Brief Summary Text - BSTR (2):

The present invention relates to high temperature separation of fluids using a ceramic membrane device and a method for separating fluids at high temperatures using a ceramic membrane device.

Brief Summary Text - BSTR (3):

Ceramic membranes have been widely used in liquid phase separations in pharmaceutical, food, beverage and other industries. Recently, they have also been tested for gas separations (Wu, J. C. S., et al, "High Temperature Separation of Binary Gas Mixtures Using Microporous Ceramic Membranes", J. Membrane Science, 77, 85 (1993)) and catalytic reactions (G. Saracco & V. Specchia, "Catalytic Inorganic Membrane Reactors, Present Experience and Future Opportunities", Catal. Review - Sci. Eng., 36, 305 (1994)). Ceramic membranes have the advantage of improved thermal and chemical stability over polymeric membranes commonly used in industrial separations.

Brief Summary Text - BSTR (4):

The use of ceramic membrane tubes in the prior applications is set forth, for example, in P. M. Valtrop et al, "Development of a High Temperature Resistant Module for Ceramic Membranes", Key Engineering Materials, 61 & 62, 391 (1991), wherein there is disclosed processes such as solid/liquid

## United States Patent (19)

Liu et al.

Patent Number: 5,611,931  
Date of Patent: Mar. 18, 1997

## HIGH TEMPERATURE FLUID SEPARATIONS USING CERAMIC MEMBRANE DEVICE

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(21) Appl. No.:

Filed: Jul. 31, 1995

(51) Int. Cl.:

B01D 61/00

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210/500.25; 210/500.26; 210/500.27; 210/500.28; 210/500.29; 210/500.30; 210/500.31; 210/500.32; 210/500.33; 210/500.34; 210/500.35; 210/500.36; 210/500.37; 210/500.38; 210/500.39; 210/500.40; 210/500.41; 210/500.42; 210/500.43; 210/500.44; 210/500.45; 210/500.46; 210/500.47; 210/500.48; 210/500.49; 210/500.50; 210/500.51; 210/500.52; 210/500.53; 210/500.54; 210/500.55; 210/500.56; 210/500.57; 210/500.58; 210/500.59; 210/500.60; 210/500.61; 210/500.62; 210/500.63; 210/500.64; 210/500.65; 210/500.66; 210/500.67; 210/500.68; 210/500.69; 210/500.70; 210/500.71; 210/500.72; 210/500.73; 210/500.74; 210/500.75; 210/500.76; 210/500.77; 210/500.78; 210/500.79; 210/500.80; 210/500.81; 210/500.82; 210/500.83; 210/500.84; 210/500.85; 210/500.86; 210/500.87; 210/500.88; 210/500.89; 210/500.90; 210/500.91; 210/500.92; 210/500.93; 210/500.94; 210/500.95; 210/500.96; 210/500.97; 210/500.98; 210/500.99; 210/501.00; 210/501.01; 210/501.02; 210/501.03; 210/501.04; 210/501.05; 210/501.06; 210/501.07; 210/501.08; 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L1: (20975) (210/348-510.1).CCLS.

L2: (1036) ceramic adj (membrane or membranes)

L3: (117) 11 and 12

L4: (597129) ground or grounds or grounded or grounding

L5: (234587) earth or earths or earthed or earthing

L6: (21) 13 and 14

L7: (16) 13 and 15

L8: (29) 16 or 17

L9: (2944) (210/321.6-321.9).CCLS.

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1			US 5647988 A	19970715	11	Method of back-washing submerged-type ceramic	210/636	210/321.69		Kawanishi, Toshio et al.				
2			US 5252218 A	19931012		Process for separating solid particulates from a	210/636	210/739	210/321.69	Muralidhara, Harapanahalli S. et				

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6074561 A	20000613	8	Apparatus and method for recovering photorealist	210/650	210/167	210/196	Jablonsky, Julius James	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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